

Appl. No. 10/603,361
Reply to Office Action of 12/30/2005
Amdt. dated 03/23/2006

Attorney Docket No.: N1085-00089
TSMC 2002-0917

REMARKS

Claims 1-19 are pending in this application and each of claims 1-19 has been rejected. Claims 1, 17 and 19 are hereby amended. Applicants respectfully request re-examination and reconsideration of claims 1-19 and allowance of each of presently pending claims 1-19. Applicants earnestly solicit the Examiner to enter and consider the amendments herein because the application is believed to be in allowable form.

I. Claim Rejections under 35 U.S.C. § 102

In the subject Office action, specifically in paragraph 2, claims 1, 3-5, 8-9 and 14-18 were rejected under 35 U.S.C § 102(e) as being anticipated by Clark et al. (U.S. Pat. No. 6,767,793), hereinafter "Clark". Applicants respectfully submit that these claim rejections are overcome for the reasons set forth below.

The claims rejected under 35 U.S.C. § 102(e) include independent claims 1, 17 and 19, the only pending independent claims.

Each of independent method claims 1 and 19 recite the feature of "planarizing the layer of gate electrode material" to produce a "substantially planar surface formed only of the gate electrode material" and "the substantially planar surface disposed atop the semiconductor device". Moreover, each of claims 1 and 19 also recite that the top of the semiconductor device is coated with a gate dielectric. Since the substantially planar surface is formed only of the gate electrode material disposed atop the semiconductor device, it is inherent that the claimed substantially planar surface is formed over the gate dielectric.

Independent device claim 17 recites the feature of:

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a multiple gate electrode on each of the opposed sides of the fin, the multiple gate electrode formed of a layer of gate electrode material and having a substantially planar surface disposed atop the gate electrode film formed over the top of the film.

Applicants' point out that the Clark structure, as illustrated in FIG. 31 as relied upon in the Office Action, does NOT include any gate electrode material 310 extending atop (i.e., above) the semiconductor device 300. Rather, the only films that are disposed atop semiconductor device 300, are silicon layer 315 and thermal oxide 320. The "gate conductors (e.g., polysilicon) 310" are clearly not disposed atop the semiconductor device 300. In FIG. 31 of Clark, nothing extends atop thermal oxide 320, much less the gate electrode material 310. Claims 1, 17 and 19 therefore recite features that distinguish from Clark.

Moreover, in the previous Clark figures, e.g., FIG. 15, Clark lacks the claimed feature of the gate oxide film formed over the semiconductor device. Claim 1 also recites "semiconductor device . . . previously coated with a thin film of gate dielectric material on the top and opposed sides of the semiconductor device" and claim 19 recites "coating a top and the opposed sides of the semiconductor device with a thin film gate dielectric" and claim 17 recites this feature as reproduced above. In contrast, in FIG. 15 and the associated figures of Clark, such as discussed in Applicants' previously-filed response of February 14, 2005, hard mask 100 and not a gate oxide material, is disposed above/atop the underlying semiconductor device. In those previous figures, the gate dielectric material is only laterally disposed on one side of the illustrated semiconductor device 155. Claims 1, 17 and 19 are therefore further distinguished from Clark.

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Since each of independent claims 1, 17 and 19 is therefore distinguished from Clark, the rejection of claims 1, 17 and 19 under 35 U.S.C. § 102(e) as being anticipated by Clark, should be withdrawn. Claims 3-5, 8-9 and 14-16 are each dependent from claim 1 and are therefore similarly distinguished from Clark. Claim 18 depends from independent claim 17 and is therefore similarly distinguished. Therefore, the rejection of each of claims 1, 3-5, 8-9 and 14-19 under 35 U.S.C. § 102(e) as being anticipated by Clark, should be withdrawn.

II. Claim rejections under 35 U.S.C. § 103 :

In the Office action, specifically in paragraph 4, claims 2, 6-7 and 10-13 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Clark as applied to claim 1 and further in view of Fried et al. (U.S. Pat. No. 6,657,252) or Yu (U.S. Pat. No. 6,648,662). Applicants respectfully submit that these claim rejections are overcome based on the reasons set forth below.

The cited reference of Yu has apparently been relied upon for teaching the application of a photoresist mask and the cited reference of Fried has apparently been relied upon for disclosing various types of gate dielectric materials. Such teachings do no make up for the above-stated deficiencies of Clark, however. Neither Yu nor Fried teaches or suggests a gate oxide film that extends over sides and the top of the semiconductor device and a gate electrode material with a substantially planar surface that is disposed above/atop the semiconductor device and gate dielectric film formed over the semiconductor device. Since claim 1 is distinguished from Clark as above and since rejected claims 2, 6-7 and 10-13 depend from claim 1, the claim rejections under

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35 U.S.C § 103(a), as being unpatentable over Clark as applied to claim 1 and further in view of Fried et al. and Yu, should therefore be withdrawn.

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CONCLUSION

Based on the foregoing, Applicants respectfully submit that each of claims 1-19 is in allowable form. Applicants earnestly solicit the Examiner to enter and consider the amendments herein because the application is now in condition for allowance, which action is expeditiously and respectfully requested by Applicants.

The Assistant Commissioner for Patents is hereby authorized to charge any fees or credit any excess payment that may associated with this communication, to Deposit Account 04-1679.

Respectfully submitted,

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